



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,222	02/13/2004	Tao Li	000687-00328	2502
27557	7590	09/21/2005	EXAMINER	
BLANK ROME LLP 600 NEW HAMPSHIRE AVENUE, N.W. WASHINGTON, DC 20037			RUSSELL, CHRISTINA MARIE	
			ART UNIT	PAPER NUMBER
			2837	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/777,222

Applicant(s)

LI ET AL.

Examiner

Christina Russell

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,4,6,7,18,21,23,24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2,3,5,8-17,19,20,22,25 and 27-34 is/are allowed.
- 6) ☒ Claim(s) 1,4,6,7,18,21,23,24 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.
2. Also a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed, is required in order to be applicable for consideration.

### ***Oath/Declaration***

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not include the notary's signature, or the notary's signature is in the wrong place.

The signatures of Tao Li and Mitsunori Ogihara are required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 26 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 26 recites the limitation "the binary classification algorithms" at the start of the claim. There is insufficient antecedent basis for this limitation in the claim. Nowhere previous in either claim 23 or 18 from which this claim is dependent is there mention of such a binary classification algorithm.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 4, 6, 7, 18, 21, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent to Stegmann (5,781,881) in view of the US patent application publication to Wells et al. (US 2003/0089341), and further in view of the US patent to Lennon et al. (6,718,063).

10. In terms of claim 1, Stegmann teaches a method of automatically forming a feature set of parameters describing an electronic signal, with said method comprising receiving the signal into a computing or processing device and performing wavelet decomposition on the signal to obtain a plurality of coefficients in a plurality of sub bands or sub frames (see column 2, lines 27-56, column 2, line 66 – column 3, line 6, and column 3, lines 65-67). Stegmann does not however teach this electronic signal as a piece of music but as acoustic speech. Stegmann also does not teach of forming a histogram of the wavelet coefficients and calculating an average, variance, skewness and sub frame energy for each histogram. Stegmann does however teach of a variance of energy and an average energy in relation to the sub frame energy (see column 4, line

61 – column 5, line 6). Wells et al. teaches of the electronic signal as a piece of music and also teaches of the forming of a histogram (see page 6, paragraphs [104] and [105]). Lennon teaches of the formed histogram containing the measurements for average, variance, skewness and energy (see column 1, lines 42-63). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate such known ideas in the art of wavelet transformation into one invention. All three references deal with computing similarities between signals, coding signals, and identifying signals, even though they deal with different signals, such as speech, music and images, so it would have been obvious to combine these ideas into one invention of multiple steps.

11. As for claim 4, Stegmann, Wells and Lennon again teach all of the above claimed elements dependent upon claim 1, including the teaching of Stegmann regarding the convolving of the signal with a Daubechies wavelet filter (see column 4, lines 37-38). Again, it would have been obvious to one of ordinary skill in the art, at the time of invention, to combine these similar processes, and build upon the basic principles of each other, such as replacing speech with music and placing the energy and other characteristics already present and calculated into a histogram formed by the already obtained coefficients.

12. As for claim 6, Stegmann, Wells and Lennon again teach all of the above claimed elements dependent upon claim 1, in addition to the further teaching of Stegmann on classifying the signal and placing it into a category (see column 4, lines 39-44). Stegmann does not however teach of said signal as a piece of music. Wells et al. does

teach of the electronic signal as music. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to combine these three inventions into one as stated above and simply replacing speech with music, since music involves lyrical speech.

13. As for claim 7, Stegmann, Wells and Lennon again teach all of the above claimed elements dependent upon claim 6, including Stegmann's teaching of a multi-class classification algorithm or calculation (see column 3, lines 35-42 and column 4, lines 28-34). Again, it would have been obvious to one of ordinary skill in the art to combine these three processes into one as explained above.

14. In terms of claim 18, the same logic used to reject claim 1 can be used here, since Stegmann teaches not only the method but also the device (see first line of abstract). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the principles of these inventions into one another for the above stated reasons provided in claim 1.

15. As for claim 21, Stegmann, Wells and Lennon again teach all of the above claimed elements dependent upon claim 18, including the teaching of Stegmann regarding the convolving of the signal with a Daubechies wavelet filter (see column 4, lines 28-38). Again, it would have been obvious to one of ordinary skill in the art, at the time of invention, to combine these similar processes, and build upon the basic principles of each other, such as replacing speech with music and placing the energy and other characteristics already present and calculated into a histogram formed by the already obtained coefficients.

Art Unit: 2837

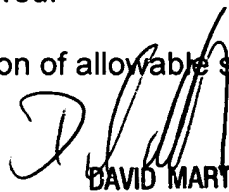
16. As for claim 23, Stegmann, Wells and Lennon again teach all of the above claimed elements dependent upon claim 18, in addition to the further teaching of Stegmann on classifying the signal and placing it into a category (see column 4, lines 39-44). Stegmann does not however teach of said signal as a piece of music. Wells et al. does teach of the electronic signal as music. It would again have been obvious to one of ordinary skill in the art, at the time of the invention, to combine these three inventions into one as stated above and simply replacing speech with music, since music involves lyrical speech.

17. As for claim 24, Stegmann, Wells and Lennon again teach all of the above claimed elements dependent upon claim 23, including Stegmann's teaching of a multi-class classification algorithm or calculation (see column 3, lines 35-42 and column 4, lines 28-34). Again, it would have been obvious to one of ordinary skill in the art to combine these three processes into one as explained above.

***Allowable Subject Matter***

18. Claims 2, 3, 5, 8-17, 19, 20, 22, 25 and 27-34 are allowed.

19. The following is a statement of reasons for the indication of allowable subject matter:

  
DAVID MARTIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800



Art Unit: 2837

20. In terms of claim 2, neither Stegmann, Wells or Lennon make any reference to the number of sub bands or sub frames used to comprise the feature or parameter sets of characteristics.

21. As for claim 3, neither Stegmann, Wells or Lennon mention extracting timbral or tonal features from the signal and including those features in the feature set.

22. As for claim 5, neither Stegmann, Wells or Lennon make reference to the portion of the electronic signal to which this method is performed on.

23. As for claims 8 and 9, neither Stegmann, Wells or Lennon mention a binary classification algorithm or said binary classification comprising a vector machine classification algorithm.

24. In terms of claim 10, as in claim 1, Stegmann, Wells and Lennon combined teach an automatic classification system for electronic signals which performs wavelet decomposition, forming coefficients, and a histogram of the coefficients, comprising the calculated average, variance, skewness and sub band energy. Neither Stegmann, Wells or Lennon, however, teach that the electronic signal represents an already known piece of music.

25. As for claim 11, neither Stegmann, Wells or Lennon teaches the electronic signal as a known piece of music or make any reference to the number of sub bands or sub frames used to comprise the feature set.

26. As for claim 12, neither Stegmann, Wells or Lennon mention extracting timbral features from the signal or the signal being a known piece of music.

27. As for claim 13, Stegmann does teach the use of a Daubechies wavelet filter, but neither Stegmann, Wells or Lennon teach of the electronic signal representing a known piece of music.

28. As for claim 14, neither Stegmann, Wells or Lennon make any reference to the portion of the electronic signal to which this method is preformed on or the signal being a known piece of music.

29. As for claims 15-17, Stegmann does teach of a multi-class classification algorithm, but neither Stegmann, Wells or Lennon teach the electronic signal as a known piece of music or mention a binary classification algorithm or said binary classification comprising a vector machine classification algorithm.

30. In terms of claims 19 and 20, neither Stegmann, Wells or Lennon make any reference to the number of sub bands or sub frames used to comprise the feature set or make mention of the extracting of timbral features from the signal.

31. As for claim 22, neither Stegmann, Wells or Lennon make any reference to the portion of the electronic signal to which this method is preformed on.

32. As for claim 25, neither Stegmann, Wells or Lennon mention the use of a binary classification algorithm by the computing r processing device.

33. In terms of claim 27, as in claim 18, Stegmann, Wells and Lennon combined teach an automatic classification device for electronic signals which performs wavelet decomposition, forming coefficients, and a histogram of the coefficients, comprising the calculated average, variance, skewness and sub band energy. Neither Stegmann, Wells

Art Unit: 2837

or Lennon, however, teach that the electronic signal represents an already known piece of music.

34. As for claims 28 and 29, neither Stegmann, Wells or Lennon teaches the electronic signal as a known piece of music, make any reference to the number of sub bands or sub frames used to comprise the feature set or make mention of extracting timbral features from the signal.

35. As for claims 30 and 31, Stegmann does teach the use of a Daubechies wavelet filter, but neither Stegmann, Wells or Lennon teach of the electronic signal representing a known piece of music or make any reference to the portion of the electronic signal to which this device performs on.

36. As for claims 32-34, Stegmann does teach of a multi-class classification algorithm, but neither Stegmann, Wells or Lennon teach the electronic signal as a known piece of music or mention a binary classification algorithm or said binary classification comprising a vector machine classification algorithm.

37. Claim 26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

**Conclusion**


38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The US patents to Nicolas et al. (5,124,930) and Nguyen et al. (6,105,015) and the US patent application publications to Casey (US 2001/0044719) and Foote et al. (US 2003/0205124).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Russell whose telephone number is 571-272-4350. The examiner can normally be reached on Mon-Fri, 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CR  
09/13/2005



DAVID MARTIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800